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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/840,637	04/23/2001	Robert Edward Burrell	14072-0100001	3974

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EXAMINER
PAK, JOHN D

ART UNIT	PAPER NUMBER
1616	15

DATE MAILED: 03/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.	Applicant(s)
09/840,637	Burrell et al.
Examiner	**Art Unit**
John Pak	1616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *Nov 25, 2002*

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1, 3, and 5-22* is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideratio

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1, 3, 5-8, 10-18, and 20-22* is/are rejected.

7) ☒ Claim(s) *9 and 19* is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examine

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 14
4) ☐ Interview Summary (PTO-413) Paper No(s). _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

Claims 1, 3 and 5-22 are pending in this application.

Claims 1, 3, 5-8, 10-18, 20-22 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for nanocrystalline antimicrobial metal that has sufficient atomic disorder to release atoms, ions, molecules or cluster of the metal into alcohol or water based electrolyte *on a sustaintable basis*, does not reasonably provide enablement for any other claim scope. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims.

The nature of the invention is in providing treatment for acne by releasing antimicrobial metal atoms, ions, molecules or clusters. The metal is described and claimed as having "sufficient atomic disorder." The degree or nature of the claim-required "atomic disorder" is defined in terms of its property in alcohol or water based electrolyte. In alcohol or water based electrolyte, the metal must release "atoms, ions, molecules, or clusters" of the metal "at a concentration sufficient to provide localized antimicrobial and anti-inflammatory effect".

This ground of rejection is based on the position reached after considerable review and study that such claim language and scope do not provide sufficient guidance as to how much atomic disorder is required to fall within the ambit of the claim. Not many substances can be considered perfectly ordered, so most substances fall within a state of being in some atomic disorder. Further, most substances have some release characteristics in alcohol or water based electrolytes. The difficult question is how much atomic disorder is needed and how does one

skilled in the art determine sufficient disorder based on metal release characteristics, without undue experimentation. It is noted that if the language "on a sustainable basis" were incorporated, this rejection would be withdrawn, because then, one skilled in the art would be able to select the amount of atomic disorder that is needed from the specification disclosure that teaches the release of the metal must continue over time measured in hours or days, thus objectively distinguishing itself from metal released by bulk metal and soluble salts (page 7, lines 13-19).

The state of the prior art is such that amount of atomic disorder in an antimicrobial and acne treatment are not well correlated. The relative skill of those in the art is quite high since medically trained professionals are charged with dispensing therapies for dermatological conditions. There is sufficient unpredictability involved in the art because it is not well established how much atomic disorder correlates to effective acne treatment. The claims are broad in that any antimicrobial metal, metal compound or metal alloy is included (specification page 7, lines 4-6). The specification guidance or direction does not further teach how to determine the metes and bounds of sufficient atomic disorder.

Therefore, one skilled in the art would not be able to determine or distinguish the amount of atomic disorder that an antimicrobial must have to fall within the scope of this invention. As a result, one skilled in the art would not be able to fully practice the invention to that extent. There is no objective measure of atomic disorder that the skilled artisan can evaluate. To have to take any state of atomic disorder, quantify it, administer it, and evaluate it for therapeutic

effectiveness on a trial- by-error basis for each and every antimicrobial metal, compound and alloy on numerous patients in need of treatment amounts to undue experimentation.

Claims 1, 3, 5-6, 13-17 and 20-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Lorina et al. (GB 1,270,410).

Lorina et al. explicitly disclose irradiated antimicrobial metals such as silver, gold, platinum and palladium as having "remarkable bactericidal, irradiation-dissipating and similar curative functions" (see p. 1, lines 40-80; p. 3, lines 27-75). Particle size is 10^{-5} to 10^{-6} cm, which is 100 to 10 nm (p. 1, lines 84-85). UV, gamma or x-ray radiation provides the activity (sentence bridging pages 1 and 2). Acne treatment with 1.5×10^{-3} g per 1 cm^3 is disclosed (p. 2, lines 90-99).

Applicant states in Paper No. 13 (11/25/02) that since claim 4 was not before rejected over Lorina et al., the amendatory incorporation of claim 4 subject matter into the independent claim 1 removes Lorina et al. as prior art. Upon reconsideration, it is now recognized that teachings of Lorina et al. is applicable with respect to claim 4 (now canceled) and many other claims, supra.

Independent claims here require treating acne with nanocrystalline antimicrobial metals (e.g. silver) that have sufficient atomic disorder so that they release atoms, ions, molecules, or cluster of the metals at a concentration sufficient to provide localized antimicrobial and anti-inflammatory effect when in contact with an alcohol or water based electrolyte. The silver metal

taught by Lorina et al. is irradiated with gamma rays, X-rays, etc. (see e.g., p. 1, lines 11-24; p. 3, lines 6-11). Applicant's own publication, WO 95/13704, discloses that gamma rays and x-rays activate or enhance the antimicrobial effect of metals, even those with previous low level of atomic disorder. See from page 26, line 1 to page 27, line 7. Therefore, it is reasonable to conclude that Lorina's irradiated metals such as silver have some atomic disorder, which disorder is sufficient to provide sufficient acne treatment, as disclosed. Applicant may argue that the WO publication teaches gamma radiation dose of 1 Mrad or greater, but it is noted that such dose is "preferred" but not required. See page 26, lines 8-9.

Previous claim 4, now incorporated into claim 1 and new claim 17, featured, inter alia, antimicrobial metals in a pharmaceutical composition with one or more pharmaceutically acceptable carriers, diluents or excipients suitable for topical application. Upon further review and reconsideration, it is recognized now that Lorina et al. disclose this feature. Irradiated silver is used in a water carrier to treat acne (Example III on pages 2-3).

Claim 5 requires a nanocrystaline powder or solution containing the dissolved species from the powder. Lorina et al. necessarily disclose the same because metal particles such as silver in the nanocrystalline size range are in solution (see the paragraph bridging pages 1 and 2; Example III on pages 2-3). Given the small size of Lorina's metals, 10-100 nm, which meets the size requirements of claims 13-16 and 20-22, the "powder" feature is necessarily present.

Claim 6 reads on liquid containing 0.001 to 1 wt% antimicrobial metal. Lorina et al. exemplifies 1.5 X 10^{-3}g per 1 cm^3, which is 0.15 wt/wt%.

The claims are thereby anticipated.

Claims 9 and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

A facsimile center has been established in Technology Center 1600. The hours of operation are Monday through Friday, 8:45 AM to 4:45 PM. The telecopier numbers for accessing the facsimile machines are (703) 308-4556 or (703) 305-3592.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Examiner Pak whose telephone number is (703) 308-4538. The Examiner can normally be reached on Monday through Friday from 7:30 AM to 4 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's Supervisor, Mr. José Dees, can be reached on (703) 308-4628.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-1235.

JOHN PAK
PRIMARY EXAMINER
GROUP 1600